

mammalian donor cell nucleus into a non-human mammalian enucleated oocyte of the same species as the donor cell or donor cell nucleus to form a nuclear transfer (NT) unit, implantation of the NT unit into the uterus of a surrogate mother of said species, and permitting the NT unit to develop into the cloned mammal, wherein the improvement comprises using as the donor cell or donor cell nucleus a proliferating somatic cell or a nucleus isolated from said proliferating somatic cell.

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87. An improved method of cloning a non-human mammal by nuclear transfer comprising the introduction of a non-human mammalian donor cell or a non-human mammalian donor cell nucleus into a non-human mammalian enucleated oocyte of the same species as the donor cell or donor cell nucleus to form a nuclear transfer (NT) unit, implantation of the NT unit into the uterus of a surrogate mother of said species, and permitting the NT unit to develop into the cloned mammal, wherein the improvement comprises using as the donor cell or donor cell nucleus a proliferating somatic cell or a nucleus isolated from said proliferating somatic cell, and wherein the donor cell or donor cell nucleus has been genetically transformed to comprise at least one addition, substitution or deletion of a nucleic acid sequence.

88. A method of cloning a non-human mammal by nuclear transfer comprising the following steps:

(i) inserting a desired non-human mammalian proliferating somatic cell or a nucleus isolated from said proliferating somatic cell, into a non-human mammalian enucleated oocyte of the same species under conditions suitable for the formation of the nuclear transfer (NT) unit;

(ii) activating the resultant nuclear transfer unit;

(iii) culturing said activated NT unit until greater than the 2-cell developmental stage; and

(iv) transferring said cultured NT unit to a host non-human mammal of the same species such that the NT unit develops into a non-human mammal.

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89. An improved method of cloning a non-human mammalian fetus by nuclear transfer comprising the introduction of a non-human mammalian donor cell or a non-human mammalian donor cell nucleus into a non-human mammalian enucleated oocyte of the same species as the donor cell or donor cell nucleus to form a nuclear transfer (NT) unit, implantation of the NT unit into the uterus of a surrogate mother of the same species, and permitting the NT unit to develop into the mammalian fetus, wherein the improvement comprises using as the donor cell or donor cell nucleus a proliferating somatic cell or a nucleus isolated from said somatic cell.

90. An improved method of cloning a non-human mammalian fetus by nuclear transfer comprising the introduction of a non-human mammalian donor cell or a non-

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human mammalian donor cell nucleus into a non-human mammalian enucleated oocyte of the same species as the donor cell or donor cell nucleus to form a nuclear transfer (NT) unit, implantation of the NT unit into the uterus of a surrogate mother of the same species, and permitting the NT unit to develop into the mammalian fetus, wherein the improvement comprises using as the donor cell or donor cell nucleus a proliferating somatic cell, or a nucleus isolated from said proliferating somatic cell, and wherein the donor cell or donor cell nucleus has been genetically modified to comprise at least one addition, substitution or deletion of a nucleic acid sequence.

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91. A method of cloning a non-human mammalian fetus by nuclear transfer comprising the following steps:

(i) inserting a desired non-human mammalian proliferating somatic cell, or a nucleus isolated from said proliferating somatic cell, into a non-human mammalian enucleated oocyte of the same species under conditions suitable for the formation of a nuclear transfer (NT) unit;

(ii) activating the resultant nuclear transfer unit;

(iii) culturing said activated NT unit until greater than the 2-cell developmental stage; and

(iv) transferring said cultured NT unit to a host non-human mammal of the same species such that the NT develops into a fetus.

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2 ~~92~~. The method of Claim ~~86~~<sup>1</sup>, wherein the fetus develops into an offspring.

3 ~~93~~. The method of Claim ~~86~~<sup>1</sup>, wherein the donor cell or donor cell nucleus is from mesoderm.

4 ~~94~~. The method of Claim ~~86~~<sup>1</sup>, wherein the donor cell or donor cell nucleus is from endoderm.

5 ~~95~~. The method of Claim ~~86~~<sup>1</sup>, wherein the donor cell or donor cell nucleus is from ectoderm.

6 ~~96~~. The method of Claim ~~86~~<sup>1</sup>, wherein the donor cell or donor cell nucleus is from a fibroblast.

A ( 7 ~~97~~. The method of Claim ~~86~~<sup>1</sup>, wherein the donor cell or donor cell nucleus is from an ungulate.

8 ~~98~~. The method of Claim ~~86~~<sup>1</sup>, wherein the donor cell or donor cell nucleus is from an ungulate selected from the group consisting of bovine, ovine, porcine, equine, caprine and buffalo.

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~~99.~~ The method of Claim ~~86~~<sup>1</sup>, wherein the donor cell or donor cell nucleus is from a non-human mammalian fetus.

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~~100.~~ The method of Claim ~~86~~<sup>1</sup>, wherein the donor cell or donor cell nucleus is from an adult non-human mammalian cell.

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~~101.~~ The method of Claim ~~86~~<sup>1</sup>, wherein the donor cell or donor cell nucleus is selected from the group consisting of epithelial cells, neural cells, epidermal cells, keratinocytes, hematopoietic cells, melanocytes, chondrocytes, B-lymphocytes, T-lymphocytes, erythrocytes, macrophages, monocytes, fibroblasts, muscle cells, and nuclei isolated therefrom.

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~~102.~~ The method of Claim ~~86~~<sup>1</sup>, wherein the donor cell or donor cell nucleus is from an organ selected from the group consisting of skin, lung, pancreas, liver, stomach, intestine, heart, reproductive organ, bladder, kidney, and urethra.

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~~103.~~ The method of Claim ~~86~~<sup>1</sup>, wherein the oocyte is matured *in vitro* or *in vivo* prior to enucleation.

~~14~~  
~~104.~~ The method of Claim ~~86~~<sup>1</sup>, wherein the oocyte is matured *in vitro* prior to enucleation.